

Received: 11 March 2016

Revised: 24 October 2016

Accepted: 19 November 2016

DOI: 10.1111/ijn.12513

WILEY

INTERNATIONAL JOURNAL
of NURSING PRACTICE

RESEARCH PAPER

Effect of acupressure on pain in Iranian leukemia patients: A randomized controlled trial study

Hamid Sharif Nia PhD Assistant Professor¹ | Saeed Pahlevan Sharif PhD Senior Lecturer² |
 Ameneh Yaghoobzadeh Master in Geriatric Nursing³ | Ken Kyid Yeoh PhD Assistant
 Professor⁴ | Amir Hossein Goudarzian BSc of Nursing⁵ |
 Mohammad Ali Soleimani PhD Assistant Professor⁶ | Saman Jamali Nursing Student⁵

¹School of Nursing and Midwifery Amol,
 Mazandaran University of Medical Sciences,
 Sari, Iran

²Taylor's Business School, Subang Jaya,
 Malaysia

³Tehran University of Medical Sciences,
 Tehran, Iran

⁴Nottingham University Business School,
 University of Nottingham Malaysia Campus,
 Semenyih, Selangor Darul Ehsan, Malaysia

⁵Student Research Committee, Mazandaran
 University of Medical Sciences, Sari, Iran

⁶Social Determinants of Health Research
 Center, Qazvin University of Medical Sciences,
 Qazvin, Iran

Correspondence

Amir Hossein Goudarzian, BSc of Nursing,
 Student Research Committee, Mazandaran
 University of Medical Sciences, Sari, Iran.
 Email: amir_sari@yahoo.com

Funding information

Mazandaran University of Medical Sciences,
 Grant/Award Number: 360

Abstract

Nonpharmacological methods of pain relief such as acupressure are becoming increasingly popular worldwide. Practitioners often claim that such methods are highly effective and less invasive than analgesic drugs, but available empirical evidence is largely inconclusive.

This study aimed to test the hypothesis that, postacupressure intervention, the amount of pain experienced by sampled leukemia patients, who received acupressure in addition to standard care, will reduce substantially compared to patients who received only routine treatment.

This controlled trial was undertaken with hospitalized leukemia patients between February and June 2015. Our primary sample consisted of 100 participants who were randomly allocated to 2 groups. One (intervention) group underwent 12 acupressure sessions in addition to standard treatment while the control group received no intervention apart from being given the standard treatment for leukemia. The visual analogue scale was used to measure the levels of pain experienced. No significant differences were found between the 2 groups across 12 interventions. However, each group reported significantly different pain level changes before and after each intervention, suggested that the acupressure method was effective in reducing pain in the short term. Nurses are able to apply this complementary therapy alongside other procedures to manage these patients' pain. It is recommended that further studies be conducted to better understand the specific conditions under which acupressure can provide effective pain relief.

KEYWORDS

acupressure, cancer, Iran, leukemia, nursing, pain

SUMMARY STATEMENT

What is already known about this topic?

- Cancer is often characterized by patients experiencing severe pain.
- There are some different methods for pain reduction of cancer patients.
- Few studies have been conducted on the effectiveness of acupressure on cancer patients' pain.

What this paper adds?

- Acupressure can be an effective nonpharmacological technique in reducing leukemia patients' pain.

- Pain in the experimental group reduced significantly after each session.

The implications of this paper:

- Study findings support continued research in this area.
- Further studies should be conducted on other types of cancer to further our understanding of this method of pain relief.

1 | INTRODUCTION

Cancer is one of the leading causes of death worldwide. One of the most prevalent symptoms reported by cancer patients, especially those

with advanced stages of the disease, is severe pain (Herr, 2011; Rose et al., 2012).

In providing pain relief, one of the more popular methods involve prescribing analgesics, but these drugs often have considerable side effects on patients, either physical or mental. More specifically, analgesics may cause (1) addiction and dependency, (2) low blood pressure, (3) weak vital functions, and (4) drowsiness, nausea, vomiting, shock, etc. For both public and private health care providers, dealing with these side effects are likely to be costly over the long term. For instance, nurses would have to spend extra time and effort to provide additional care for all affected patients. Moreover, this option may also be too costly for cancer patients that are less well-off financially (Belfer et al., 2014; Ripamonti et al., 2012).

Besides conventional pharmacological methods of pain relief, a number of behavioral techniques have also attracted some academic scrutiny of late (Chao et al., 2009). Popular methods include relaxation methods (Büyükyılmaz & Aşti, 2013), therapeutic touch (Anderson et al., 2015), music therapy (Hauck, Metzner, Rohlf, Lorenz, & Engel, 2013), acupuncture (Paley, Johnson, Tashani, & Bagnall, 2015), and acupressure. Such pain-relieving techniques are often perceived to be easier, safer and more affordable for cancer patients (Chao et al., 2009; Lau et al., 2016). In fact, anecdotal evidence suggests that many patients would try these seemingly less invasive options before resorting to taking analgesics (Gasperini, de Siqueira, & Costa, 2014). Moreover, unlike pharmacological interventions, the aforementioned alternative options do not cause undesirable side effects (Moore, Keogh, Crombez, & Eccleston, 2013). Even though a few of these behavioral methods have been studied by researchers in the past, our paper focuses specifically on the acupressure method.

Acupressure, a kind of therapy whose origins date back more than 5000 years, is often regarded as an integral component of traditional Chinese medicine. This therapy, similar to the acupuncture method,

focuses on specific points around the body (commonly referred to as acupoints or meridians; Bao et al., 2011). It mainly involves the use of precise finger placements to apply pressure on these specific points. Besides fingers, some practitioners prefer to use their palms, elbows, forearms, or even specialized devices to generate acupressure. This is because, according to practitioners, vital energy (qi) in the body circulates through the meridians and any imbalances in the flow of energy can be rectified by stimulating these specific points. In fact, practitioners often claim that "proper" manipulation of acupoints is highly effective for controlling the symptoms of various diseases (Song et al., 2015) (DeLisa, Gans, & Walsh, 2005; King, 2004). There are approximately 365 known acupoints, and each affects a different part of the human body (Faircloth, 2015).

Past empirical studies on the effectiveness of acupressure in alleviating chronic pain have yielded mixed/inconclusive findings. On the one hand, some studies have documented the effectiveness of acupressure in alleviating menstrual pain (Aghamiri, Vigeh, Latifnezhead, & Nabavi, 2005), migraine (Kermanshahi, Sadrizadeh, & Nafisi, 2010) as well as back pain experienced by patients with spondylarthritis (Mahmodzadeh Ardakani, Akbari Kaji, Abotalabi, Mohamannazhad, & GHafarifard, 2012). Conversely, studies such as Kwekkeboom, Cherwin, Lee, and Wanta (2010) reported that nondrug treatments have no significant effects in pain relief. We argue that further empirical scrutiny is required as, apart from the inconclusive empirical evidence, unsubstantiated claims are often made in the popular press as well as practitioner circles regarding the effectiveness of acupressure in alleviating chronic pain experienced by cancer patients. We hypothesized that, postacupressure intervention, the amount of pain experienced by sampled leukemia patients, who received acupressure in addition to standard care, will reduce substantially compared to patients who received only routine treatment.

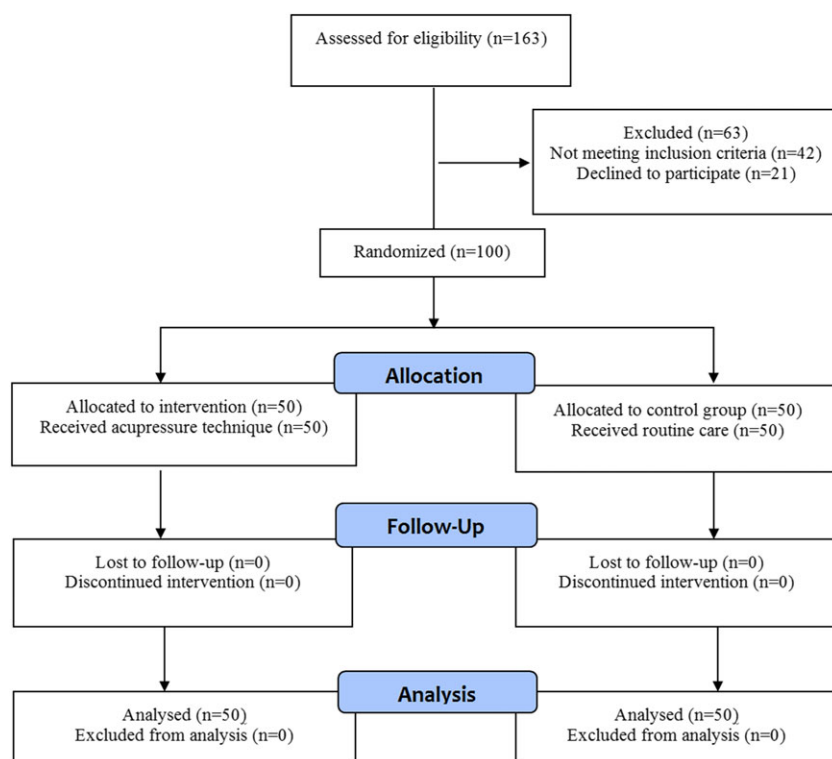


FIGURE 1 Consort diagram showing the number of patients enrolled in the study

2 | METHODS

2.1 | Study design and sample

We adopted a single-blind, randomized control trial research design to investigate the effect of acupressure therapy on the degrees of pain experienced by leukemia patients.

Our primary sample consisted of 163 leukemia patients who were warded at Imam Khomeini Hospital's Oncology Unit (Tehran, Iran) in 2015. In participant selection criteria, all leukemia patients that met the following criteria were invited to participate in this study: (1) age 18 or older; (2) no prior history of heart-related diseases; (3) experienced no abnormal levels of stress before and during the study (based on participant's self-report and his/her doctor's opinion); (4) life expectancy of more than 3 months (based on doctor's diagnosis); (5) normal mental health (based on participant's self-report and his/her doctor's opinion); and (6) receiving opioids for chronic pain caused by cancer.

Some participants were excluded or removed from the study due to the following reasons: (1) transferred to another hospital, (2) having a history of allergy to opioids, (3) having a history of drug abuse, (4) suffering from skin diseases (such as rash and ulcer on acupressure points), and (5) failed to turn up for more than 2 therapy sessions.

The target sample size was set at 100 using the G-power 3.0.10 program taking an impact size of 0.540 (based on a similar study outcome) $\alpha = 0.05$, power $(1-\beta) = 0.80$ at a confidence interval of 95% (Alimi et al., 2003).

2.2 | Measures

Data collection was conducted between February and June 2015. Once a patient's eligibility was determined, we explained the purpose of our study to him/her including the exact nature of the therapy sessions. Those who agreed to participate were asked to sign a consent form. Subsequently, group allocation was performed: a random number table was used to select patients from an initial name list through simple random sampling.

Each participant was then allocated into either the intervention or the control group by block randomization with a random sequence of 2 or 4 block sizes (please refer to Figure 1). In demographic characteristics, the 2 groups were broadly similar with respect to the following dimensions: age, sex, occupation, education, economic status, marital status, duration of disease, type of cancer, family history of cancer, and stage of the disease (see Table 1). All relevant information was collected by our research assistant through face-to-face interview with each participant prior to conducting the intervention sessions.

2.3 | Intervention

Data were collected 15 minutes before, and immediately after, every scheduled therapy session. For example, each participant had to complete a pain intensity scale pre and postintervention. At the beginning of the first intervention session, our acupressure specialist (a member of the Iranian Association of Acupuncture) explained the specific mechanics of this technique to all participants. For the purposes of this study, a number of acupressure points were selected based on past studies and also expert practitioners' opinion (Melzack, Stillwell, &

TABLE 1 Sociodemographic characteristics of patients in the randomized groups

Variables	Experimental Group N (%) or Mean (SD)	Control Group N (%) or Mean (SD)	P value
Sex			
Male	25(50%)	23(46%)	.485
Female	25(50%)	27(54%)	
Age	45.80(6.16)	44.10(6.33)	.177
Marriage			
Single	9(18%)	12(24%)	.461
Married	41(82%)	38(76%)	
Education			
Illiterate	15(30%)	12(24%)	.440
Diploma	23(46%)	26(52%)	
Bachelor	12(24%)	10(20%)	
Master and above	0(0%)	2(2%)	
Economic situation			
Weak	10(20%)	9(18%)	.956
Average	27(54%)	27(54%)	
Good	13(26%)	14(28%)	
Employment			
Employee	22(44%)	16(32%)	.328
Unemployed	6(12%)	11(22%)	
Student	1(2%)	3(6%)	
Self-employment	21(42%)	20(40%)	
Cancer stage			
Stage 1	6(12%)	4(8%)	.972
Stage 2	18(36%)	18(36%)	
Stage 3A	17(34%)	19(38%)	
Stage 3B	6(12%)	6(12%)	
Stage 3C	3(6%)	3(6%)	
Cancer type			
AML	13(26%)	12(24%)	.815
ALL	22(44%)	20(40%)	
CML	15(30%)	18(36%)	
Family history			
Yes	15(30%)	14(28%)	.826
No	35(70%)	36(72%)	

Abbreviations: AML, acute myeloid leukemia; ALL, acute lymphoblastic leukemia; CML, Chronic myeloid leukemia.

Fox, 1977; Richardson & Vincent, 1986). These points included Tai Chong (LIV-3), Zusanli (ST-36), Quchi (LI-11), and Hegu (LI-4). The selected points, LI4 (between the first and second metacarpal bone), LI 11 (midpoint of L5 and the lateral humeral epicondyle), ST-36 (the front of the tibia), and LIV3 (the first metatarsal), were stimulated bilaterally for 2 minutes by the specialist (Yuan, 2003). Pressure was applied to the extent that patients felt tingling and mild pain at those specific points (Wong, Lai, & Tse, 2010). After each intervention, patients were asked to determine the amount of pain experienced.

The acupressure techniques, as described above, were repeated 12 times over a 4-week period (ie 3 sessions per week). Each session lasted approximately 8 minutes (Karimipour, Fayazi, MOWLA, & Latifi, 2012). The required number of treatment sessions was rather

subjective as it was partly based on the acupressure specialist's assessment (according to age, general health, and amount of chronic pain) (DeLisa et al., 2005; King, 2004); however, Golbin (2004) recommended that, for chronic pain, at least 6 sessions of acupressure is required (Golbin, Kravitz, & Keith, 2004). The acupressure specialist for this study was a qualified doctor (ie MD) who was also an expert in complementary medicines; he had completed special workshops in acupuncture (ie Auricular, Intra Muscular Stimulation (IMS) and Trigger Point Therapy) and was also a member of the Iranian Association of Acupuncture.

As for the control group, they only received the usual treatment for leukemia patients in this hospital. This entailed checking vital signs, monitoring to assess possible reactions to treatments, etc. No acupressure intervention was initiated for them. Furthermore, to avoid any potential sources of bias, no information pertaining to alternative methods of pain relief was given to those who made up the control group. They were only briefed on the different ways of reducing pain, and the supposed effects of acupressure after the study was completed.

2.4 | Outcome measures

In this study, clinical and demographic variables, and the visual analog scale (VAS) were used to determine the severity of pain. Acupressure sessions and pain were the independent and dependent variables, respectively.

The primary measurement instrument for the intensity of pain experienced by participants was the 10-point VAS. This is the most widely used pain assessment tool worldwide; we chose this scale for its high reliability and validity. In addition, the VAS is designed to be user friendly—the extreme left (0) indicates no pain, and the right side (10) represents the most severe pain imaginable. After each acupressure intervention session, patients were asked to determine the amount of pain that they felt on the pain-scale ruler. More specifically, they were given less than 1 minute to express the severity of pain experienced by using a number based on VAS. Score of 1-3 indicates mild pain, 4-7 moderate pain, and 8-10 severe pain (de Beer et al., 2012).

2.5 | Ethical considerations

This study was conducted in accordance to the conventions laid out within the Helsinki Statement (Association GAotWM, 2014) and was approved by our associated university's medical sciences ethics committee (Code 362, approved in 2015). Patients were (1) informed about the study's aims and procedures, (2) informed about the voluntary nature of their participation, and (3) given assurances that any/all interventions would not affect their conventional medical care before signing an informed consent document. Patient confidentiality was assured by completing all of the study procedures in a quiet treatment area. All personal data were anonymized by using codes when referring to participants.

2.6 | Statistical analysis

Descriptive statistics included frequencies, mean and standard deviation for sociodemographic variables of the participants. These were analyzed using the Statistical Package for the Social Sciences version 23.0 (SPSS Inc., Chicago, Illinois). A mixed analysis of variance (ANOVA) test was conducted to examine the effect of the acupressure method on participants' pain levels. The mixed between-within subjects ANOVA compared the mean differences in pain between groups split along the following dimensions: (1) before and after intervention and (2) after all 12 interventions (as within subjects), as well as (3) control and experimental group (as between subjects). To improve our understanding of the effectiveness of interventions, we used repeated measures ANOVA and independent paired t-tests. An effect size of 0.5 suggests change that is clinically important (Dworkin et al., 2008). The significance level for all the tests was set at $P < .05$.

3 | RESULTS

Table 1 shows the sociodemographic profiles of study participants. Most were married (ie 41 patients in the experimental group and 38 patients in the control group) with a mean age of 45.80 years for the experimental group and 44.10 years for the control group. Participants

TABLE 2 The results of mixed between-within subjects ANOVA to examine the effectiveness of acupressure on pain

		Sessions					
		1	2	3	4	5	6
Control	Before	7.84 (1.376)	7.80 (1.370)	7.78 (1.404)	7.88 (1.206)	7.72 (1.457)	7.80 (1.370)
	After	7.80 (1.245)	7.78 (1.234)	7.82 (1.335)	7.70 (1.313)	7.78 (1.314)	7.50 (1.298)
	Mean difference	.040 (.989)	.020 (1.134)	-.040 (1.245)	.180 (1.410)	-.060 (1.361)	.300 (1.876)
	P value	.776	.901	.821	.371	.757	.264
Experimental	Before	7.94 (1.406)	8.20 (1.245)	8.06 (1.346)	8.02 (1.421)	7.96 (1.245)	7.98 (1.505)
	After	5.64 (1.258)	5.58 (1.341)	5.52 (1.233)	5.48 (1.359)	5.46 (1.265)	5.54 (1.297)
	Mean difference	2.300 (.839)	2.620 (.923)	2.540 (.930)	2.540 (1.182)	2.500 (.974)	2.440 (1.500)
	P value	<.001	<.001	<.001	<.001	<.001	<.001

Note: Values are Mean (SD); P value is adjusted for age and sex

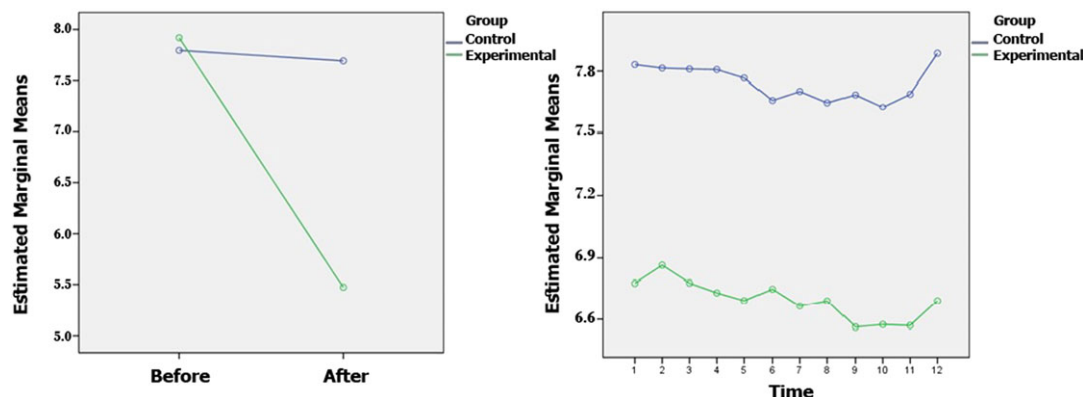


FIGURE 2 Plot of the mean scores of pain in control and experimental group pretest/posttest (left) and time (right)

to control in the present study eg cultural, social, and emotional factors. These factors should be considered in future studies.

5 | CONCLUSION

This paper has identified and evaluated the effectiveness of acupressure on pain reduction among cancer patients. Based on the results obtained from the present study, it can be stated that acupressure methods applied to recommended points along with the other medical treatments can have pain alleviating effects without any side effects. In administering acupressure therapy to patients, nurses should be properly trained to enable them to apply this complementary therapy along with other medical procedures. Finally, it would be interesting to undertake comparative cultural studies in the control and effectiveness of this method for pain relief in cancer patients.

ACKNOWLEDGEMENTS

Authors would like to express their gratitude for the cooperation of all principals, nurses and patients in the Oncology Department of Imam Khomeini Hospital in Tehran, Iran. Also, we acknowledged Dr Mohammad Mehdi Asadi for his training and for conducting the acupressure procedure for our cancer patients. The project was supported by the social determinants of health research center, Mazandaran University of Medical Sciences, Sari, Iran (grant 360).

CONFLICT OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

AUTHORSHIP STATEMENT

All authors meet the authorship criteria and that they all agree with the content of the manuscript.

REFERENCES

- Aghamiri, Z. B., Vige, M., Latifnezhead, R., & Nabavi, S. (2005). Study of effect of acupressure methods on pain in primary dysmenorrhea. *HAYAT*, 11, 19–28.
- Alimi, D., Rubino, C., Pichard-Leandri, E., Femand-Brule, S., Dubreuil-Lemaire, M. L., & Hill, C. (2003). Analgesic effect of auricular acupunc- ture for cancer pain: a randomized, blinded, controlled trial. *Journal of Clinical Oncology*, 21, 4120–4126.
- Anderson, J. G., Suchicital, L., Lang, M., Kukic, A., Mangione, L., Swengros, D., ... Friesen, M. A. (2015). The effects of healing touch on pain, nau- sea, and anxiety following bariatric surgery: a pilot study. *EXPLORE: The Journal of Science and Healing*, 11, 208–216.
- Association GAotWM (2014). World medical association declaration of Helsinki: ethical principles for medical research involving human sub- jects. *The Journal of the American College of Dentists*, 81, 14.
- Bao, T., Ye, X., Skinner, J., Cao, B., Fisher, J., Nesbit, S., & Grossman, S. A. (2011). The analgesic effect of magnetic acupressure in cancer patients undergoing bone marrow aspiration and biopsy: a randomized, blinded, controlled trial. *Journal of Pain and Symptom Management*, 41, 995–1002.
- Belfer, I., Greco, C. M., Lokshin, A., Vulakovich, K., Landsittel, D., Dai, F., ... Chelly, J. E. (2014). The design and methods of genetic studies on acute and chronic postoperative pain in patients after total knee replacement. *Pain Medicine*, 15, 1590–1602.
- Büyükyılmaz, F., & Aşti, T. (2013). The effect of relaxation techniques and back massage on pain and anxiety in Turkish total hip or knee arthroplasty patients. *Pain Management Nursing*, 14, 143–154.
- Chao, L. F., Zhang, A. L., Liu, H. E., Cheng, M. H., Lam, H. B., & Lo, S. K. (2009). The efficacy of acupoint stimulation for the management of therapy-related adverse events in patients with breast cancer: a sys- tematic review. *Breast Cancer Research and Treatment*, 118, 255–267.
- de Beer, J., Petruccielli, D., Adili, A., Piccirillo, L., Wismer, D., & Winemaker, M. (2012). Patient perspective survey of total hip vs total knee arthroplasty surgery. *The Journal of Arthroplasty*, 27, 865–869. e865.
- DeLisa, J. A., Gans, B. M., & Walsh, N. (2005). *Physical Medicine and Rehabilitation: Principles and Practice*. The US, New Jersey: Lippincott Williams & Wilkins.
- Dworkin, R. H., Turk, D. C., Wyrwich, K. W., Beaton, D., Cleeland, C. S., Farrar, J. T., ... Zavisic, S. Interpreting the clinical importance of treat- ment outcomes in chronic pain clinical trials: IMMPACT recommendations. *The Journal of Pain* 2008; 9: 105–121.
- Faircloth, A. (2015). Acupuncture: History from the Yellow Emperor to Modern Anesthesia Practice. *AANA J*, 83(4), 285–295.
- Gasperini, G., de Siqueira, I. R., & Costa, L. R. (2014). Does low-level laser therapy decrease swelling and pain resulting from orthognathic sur- gery? *International Journal of Oral and Maxillofacial Surgery*, 43, 868–873.
- Golbin, A., Kravitz, H., & Keith, L. G. (2004). *Sleep Psychiatry* (1st ed.). The US, Chicago: CRC Press.
- Hauck, M., Metzner, S., Rohlffs, F., Lorenz, J., & Engel, A. K. (2013). The influence of music and music therapy on pain-induced neuronal oscilla- tions measured by magnetencephalography. *Pain*, 154, 539–547.
- Herr, K. (2011). Pain assessment strategies in older patients. *The Journal of Pain*, 12, S3–S13.
- Hjelmstedt, A., Shenoy, S. T., Stener-Victorin, E., Lekander, M., Bhat, M., Balakumaran, L., & Waldenström, U. (2010). Acupressure to reduce

- labor pain: a randomized controlled trial. *Acta Obstetrica et Gynecologica Scandinavica*, 89, 1453–1459.
- Hsieh, L. L.-C., Kuo, C.-H., Yen, M.-F., & Chen, T. H.-H. (2004). A randomized controlled clinical trial for low back pain treated by acupressure and physical therapy. *Preventive Medicine*, 39, 168–176.
- Karimipour F, Fayazi S, Mowla K, Latifi SM. Effect of acupressure on severity of pain in arthritis rheumatoid patient. 2012.
- Kermanshahi, S., Sadrizadeh, R., & Nafisi, S. (2010). The effect of auto acupressure on relieving headache in migraine. *Journal of Kermanshah University of Medical Sciences (J Kermanshah Univ Med Sci)*, 13.
- King, J. (2004). *Breast Cancer Answers: Practical Tips and Personal Advice From a Survivor*. New York: New Page Books.
- Kotani, N., Hashimoto, H., Sato, Y., Sessler, D. I., Yoshioka, H., Kitayama, M., ... Matsuki, A. (2001). Preoperative intradermal acupuncture reduces postoperative pain, nausea and vomiting, analgesic requirement, and sympathoadrenal responses. *Anesthesiology-Philadelphia Then Hagerstown*, 95, 349–356.
- Kwekkeboom, K. L., Cherwin, C. H., Lee, J. W., & Wanta, B. (2010). Mind-body treatments for the pain-fatigue-sleep disturbance symptom cluster in persons with cancer. *Journal of Pain and Symptom Management*, 39, 126–138.
- Lau, C. H., Wu, X., Chung, V. C., Liu, X., Hui, E. P., Cramer, H., ... Wu, J. C. (2016). Acupuncture and related therapies for symptom management in palliative cancer care: systematic review and meta-analysis. *Medicine (Baltimore)*, 95, e2901.
- Mahmodzadeh Ardakani, H., Akbari Kaji, M., Abotalabi, G., Mohamannazhad, A., & GHaforifard, M. (2012). Effect of acupressure on low back pain in patients with SPONDYLARTHROSIS. *Journal of Urmia Nursing And Midwifery Faculty*, 10, 0–0.
- Melzack, R., Stillwell, D. M., & Fox, E. J. (1977). Trigger points and acupuncture points for pain: correlations and implications. *Pain*, 3, 3–23.
- Moore, D. J., Keogh, E., Crombez, G., & Eccleston, C. (2013). Methods for studying naturally occurring human pain and their analogues. *Pain*, 154, 190–199.
- Paley, C. A., Johnson, M. I., Tashani, O. A., & Bagnall, A.-M. (2015). Acupuncture for cancer pain in adults. *Cochrane Database of Systematic Reviews* (10). doi: 10.1002/14651858.CD007753.pub3
- Richardson, P. M., & Vincent, C. A. (1986). Acupuncture for the treatment of pain: a review of evaluative research. *Pain*, 24, 15–40.
- Ripamonti, C. I., Santini, D., Maranzano, E., Berti, M., Roila, F., & Group obotEGW (2012). Management of cancer pain: ESMO clinical practice guidelines. *Annals of Oncology*, 23, 139–154.
- Rose, L., Smith, O., Gélinas, C., Haslam, L., Dale, C., Luk, E., ... Watt-Watson, J. (2012). Critical care nurses' pain assessment and management practices: a survey in Canada. *American Journal of Critical Care*, 21, 251–259.
- Song, H. J., Seo, H.-J., Lee, H., Son, H., Choi, S. M., & Lee, S. (2015). Effect of self-acupressure for symptom management: a systematic review. *Complementary Therapies in Medicine*, 23, 68–78.
- Wong, C., Lai, K., & Tse, H. (2010). Effects of SP6 acupressure on pain and menstrual distress in young women with dysmenorrhea. *Complementary Therapies in Clinical Practice*, 16, 64–69.
- Yuan, C.-S. (2003). *Bieber EJ. Textbook of complementary and alternative medicine: The US, Illinois: CRC Press.*

How to cite this article: Sharif Nia H, Pahlevan Sharif S, Yaghoobzadeh A, et al. Effect of acupressure on pain in Iranian leukemia patients: A randomized controlled trial study. *Int J Nurs Pract*. 2017;23:e12513. <https://doi.org/10.1111/ijn.12513>